

CLAIMS

1. A process for producing a dipeptide, which comprises:

- 5 allowing an enzyme source and a diketopiperazine wherein one or two kinds of α -amino acids or derivatives thereof are condensed with each other to be present in an aqueous medium, said enzyme source being a culture of a microorganism having the ability to produce a dipeptide from a diketopiperazine wherein two kinds of α -amino acids are condensed with each other or a treated matter of the culture; allowing the dipeptide to form and accumulate in the aqueous medium; and
- 15 recovering the dipeptide from the aqueous medium (provided that the case in which the diketopiperazine is a diketopiperazine wherein aspartic acid and phenylalanine are condensed with each other and the dipeptide is aspartylphenylalanine is excluded).

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2. The process according to Claim 1, wherein the microorganism having the ability to produce a dipeptide from a diketopiperazine wherein two kinds of α -amino acids are condensed with each other is a microorganism which produces dipeptides in which the proportion of one kind of dipeptide is 70% or more.

3. The process according to Claim 1 or 2, wherein the microorganism having the ability to produce a dipeptide from a diketopiperazine wherein two kinds of α -amino acids are condensed with each other is a microorganism obtained by a method comprising:
- 30 [1] the step of culturing test microorganisms using a medium comprising a diketopiperazine wherein two kinds of α -amino acids are condensed with each other as the sole carbon source or nitrogen source;
- 35

[2] the step of selecting microorganisms which are recognized to grow in the above step [1]; and

[3] the step of selecting a microorganism which forms and accumulates a dipeptide in an aqueous medium when the

5 diketopiperazine used in the above step [1] and the microorganisms selected in the above step [2] are allowed to be present in the aqueous medium.

4. The process according to Claim 2, wherein the
10 microorganism having the ability to produce a dipeptide from a diketopiperazine wherein two kinds of α -amino acids are condensed with each other is a microorganism obtained by a method comprising:

[1] the step of culturing test microorganisms using a
15 medium comprising a diketopiperazine wherein two kinds of α -amino acids are condensed with each other as the sole carbon source or nitrogen source;

[2] the step of selecting microorganisms which are recognized to grow in the above step [1]; and

20 [3] the step of selecting a microorganism which forms and accumulates dipeptides in an aqueous medium, the proportion of one kind of dipeptide in the dipeptides formed and accumulated being 70% or more, when the diketopiperazine used in the above step [1] and the
25 microorganisms selected in the above step [2] are allowed to be present in the aqueous medium.

5. The process according to any one of Claims 1 to 4, wherein the microorganism having the ability to produce
30 a dipeptide from a diketopiperazine wherein two kinds of α -amino acids are condensed with each other is a microorganism belonging to the genus Microbacterium, Sinorhizobium or Pseudomonas.

35 6. The process according to Claim 5, wherein the microorganism belonging to the genus Microbacterium is

Microbacterium luteolum.

7. A process for producing a dipeptide, which comprises:
- 5 allowing an enzyme source and a diketopiperazine wherein one or two kinds of α -amino acids or derivatives thereof are condensed with each other to be present in an aqueous medium, said enzyme source being a culture of a microorganism belonging to the genus Microbacterium,
- 10 Sinorhizobium or Pseudomonas having the ability to produce a dipeptide from a diketopiperazine wherein two kinds of α -amino acids are condensed with each other or a treated matter of the culture;
- allowing the dipeptide to form and accumulate in the
- 15 aqueous medium; and
- recovering the dipeptide from the aqueous medium.

8. The process according to Claim 8, wherein the microorganism belonging to the genus Microbacterium is
- 20 Microbacterium luteolum.

9. The process according to any one of Claims 1 to 8, wherein the α -amino acid is an α -amino acid selected from the group consisting of alanine, glutamine, glutamic
- 25 acid, glycine, valine, leucine, isoleucine, proline, phenylalanine, tryptophan, methionine, serine, threonine, cysteine, asparagine, tyrosine, lysine, arginine, histidine, aspartic acid and ornithine.

- 30 10. The process according to any one of Claims 1 to 9, wherein the two kinds of α -amino acids are alanine and glutamine, and the dipeptide is alanylglutamine.

11. The process according to any one of Claims 1 to
- 35 10, wherein the treated matter of the culture is concentrated culture, dried culture, cells obtained by

centrifuging the culture, or a product obtained by
subjecting the cells to drying, freeze-drying, treatment
with a surfactant, treatment with a solvent, enzymatic
treatment, immobilization, mechanical friction or
5 ultrasonication.

12. A microorganism having the ability to produce a
dipeptide from a diketopiperazine wherein two kinds of α -
amino acids are condensed with each other which is
10 selected from the group consisting of Microbacterium
luteolum No. 93 (FERM BP-08513), Microbacterium sp. No.
119 (FERM BP-08514), Sinorhizobium sp. No. 1 (FERM BP-
08509), Sinorhizobium sp. No. 164 (FERM BP-08510),
Pseudomonas sp. No. 107 (FERM BP-08511) and Pseudomonas sp.
15 No. 108 (FERM BP-08512).